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1745

PATENT
Docket No.: Q130-US1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: :
Hisashi Tsukamoto et al. :
Application No.: 10/034,316 : Group Art Unit: 1745
Filing Date: December 28, 2001 : Examiner: Susy N. Tsang Foster
Title: ELECTROLYTE SYSTEM :
AND ENERGY STORAGE :
DEVICE USING SAME :

CERTIFICATE OF MAILING VIA EXPRESS MAIL (37 CFR 1.10)

Express Mail No.: EV334662718US
Dated December 18, 2003

Commissioner for Patents
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1. Interview Summary Supplement
3. Self addressed stamped return postcard

December 18, 2003
Date of Deposit

Lisa K. Robbins
Name of Person Mailing paper or fee


Signature

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:
TSUKAMOTO et al.

Serial No.: 10/034,316

Filed: 28 December 2001

Title: Electrolyte System and Energy
Storage Device Using Same

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

: Examiner: Susy Tsang-Foster

: Art Unit: 1745

INTERVIEW SUMMARY (SUPPLEMENT)

The following is a supplemental record of the personal interview between Examiner Susy Tsang-Foster of the USPTO and Applicant's representative, M. Elizabeth Bush, on December 2, 2003. As stated in the Interview Summary, Applicant concurs with the Examiner's Interview Summary. Furthermore, as discussed in the interview, the JP reference teaches mixing the flame retardant in the electrolytic solution (paragraph [0023]), leading one skilled in the art to expect a solution or dispersion, with immiscible combinations going against the teaching of the reference. As discussed in the interview, combinations of flame retardants and electrolyte solutions disclosed in the JP reference may include some combinations that are miscible, immiscible, and forming dispersions. (Enclosed as Exhibit A are results of a test showing one combination that was found to be immiscible.) It was submitted that because the JP reference teaches mixing the flame retardant in the electrolytic solution, it does not in fact teach selecting combinations of materials for their immiscibility. Moreover, the JP reference does not enable one skilled in the art to make and use the claimed invention because upon finding that a combination of flame retardant and electrolyte solution separated and formed a meniscus, one would conclude based on the teaching of the JP reference that the combination was not a suitable electrolyte system. Furthermore, as discussed in the interview, the Arai reference teaches away from using solvents that separate from the flame retardant, and calls such solvent/flame retardant/salt combinations "not compatible" and "[u]npreparable". It was submitted that one skilled in the art and aware of Arai's teaching, and not aware of Applicant's new teaching, would presume immiscible combinations in the JP reference to be unsuitable as an electrolyte system.

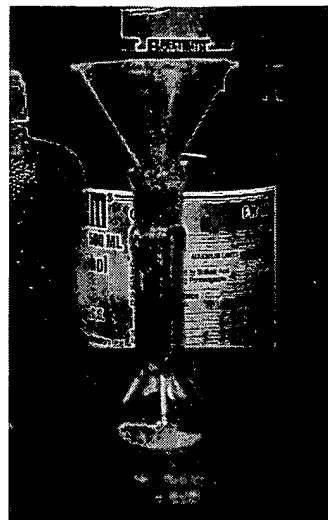
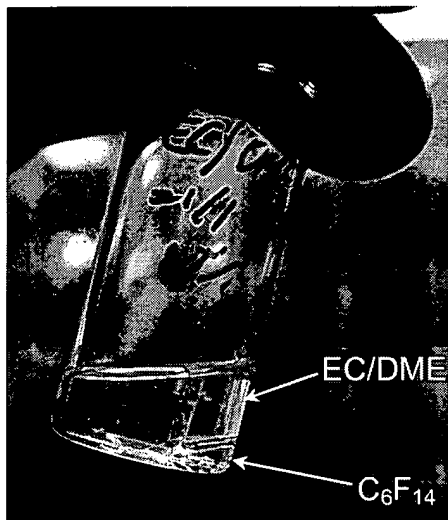
Respectfully submitted,

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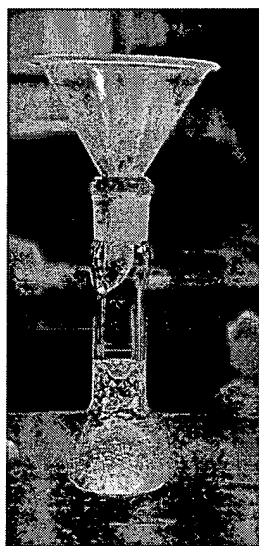
Exhibit A

In an attempt to combine C_6F_{14} and EC/DME (these materials being disclosed in paragraph [0043] of JP 10-012272A machine translation), the following steps were performed twice, once using weight ratios and once using volume ratios. The resulting pictures from both tests look very similar, so only the wt% series is shown below.



1. EC and DME were combined 1:1. Then, the EC/DME solvent mixture and C_6F_{14} were combined 85:15. These liquids proved to be substantially immiscible, forming a meniscus between them.

2. $LiPF_6$ was placed in a volumetric flask.



3. In an attempt to maintain the desired proportions of 85% EC/DME to 15% C_6F_{14} , the container with the EC/DME and C_6F_{14} was shaken to mix up the liquids, and then quickly measured into the flask in an amount that, if the EC/DME had been soluble in the C_6F_{14} , would have produced a 1-M solution.

4. The C_6F_{14} quickly separated out, forming a meniscus with the electrolyte solution.